Development Communication in Action

Building Understanding and Creating Participation

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Chapter 12

Audience Participation and Message Effectiveness in Radio Broadcasting for Health Education:
A case-study from Nigeria

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This study examines the impact of participation on the effects of rural radio broadcasting on rural communities in Nigeria. It provided the opportunity to scientifically test the variable 'participation' as a key element in the success of development communication. The findings uphold the claim that **target audience participation** is positively related to the effectiveness of rural radio broadcasting. It also shows that physically taking part in an activity (physical participation) has the potential of radiating into the lives and actions of non-participants who are physically and/or emotionally near to the physical participant. Hence it supports the theoretical perspective of radiational participation.

Preamble

The prevalence and incidence of illness in rural communities are generally caused by communicable diseases - dysentery, measles, diarrhoea, typhoid fever, etc. These, of course, have their origins in unsanitary surroundings, poor eating habits and lack of proper medical care. The primary strategy for preventing the diseases, by modern methods, is to try to stop the chain of transmission with actions that would prevent the carrier from reaching and infecting others.

In many developing societies, sanitation and immunization are usually the first steps taken in attempts at reducing the danger and spread of such diseases. Because such preventive actions are novel methods of dealing with illnesses in rural communities, their acceptance has to be induced by information and nurtured by communication. But to be successful, such non-formal educational activities geared towards knowledge acquisition and utilization of modern health-care practices must take the socio-cultural contexts of the rural communities into account. For as Pettegrew (1988) has noted, "health communication dynamics are not embodied sufficiently or convincingly in only 'information versus persuasion' perspectives. All communication is contextually bound in situation and culture that, to a large extent, pre-determine health outcomes." Of course, Pettegrew was re-echoing in more forceful terms the observation by Gerbner and his associates (1982) to the effect that "the success or failure of educational and informational health campaigns depends largely on the broader cultural context in which they are injected." Appropriate utilization of cultural data, or what Tulloch &Lupton (1997, p. 92) have called "'just right' cultural effect" would eliminate the risk of semantic 'noise' therefore ensure efficient transfer of knowledge to attitudes and behavior.

The very essential cultural data that should be seriously taken into account include folk medicine and native curing practices, social organization of the family, education and literacy, religion and basic value system. Insufficient, or worse still, lack of, knowledge about these cultural data invariably affects the ability of modern medical personnel to win the attention of, let alone, the acceptance of modern medical and health-care practices by, rural inhabitants.

Knowledge of such cultural values and contexts cannot be fully taken into account by modern health personnel or by communication specialists unless there is effective interaction between them and the inhabitants of rural communities. Such interactions do obtain under the traditional delivery system where those who heal the sick are both physicians and therapists, as well as social norms protectors, concerned not only with the health of the individual but also with the welfare of the entire community. Under modern methods, this very necessary interactive atmosphere is almost non-existent. Yet it is inevitable for successful health education in the rural communities. This study will show that the creation of this enabling interactive atmosphere is not impossible when using modern medical methods; that it has as much impact under modern as it has under traditional method. The direct

exchange of ideas consequent upon such interactions, do not always necessarily depend on, but are positively facilitated by, the impact of modern communication channels, that is, the mass media. However, it has to be the mass media turned from being instruments for "dumping information" on the people to being instruments for ensuring "enhancing mutual exchange of ideas and acquisition of knowledge".

Literature Review

The medical (health) care predisposition of individuals (Maykovich, 1980: 143), particularly of rural inhabitants, is almost invariably associated with demographic factors (age, sex, marital status, etc), social structural variables (education, race, occupation, income, family size, etc) and cultural beliefs (attitudes towards health and health services, knowledge about diseases, etc). Which of these wields the greatest impact and/or how the relationship among them affects health-seeking behavior has since been the subject of many scientific research endeavors. Different researchers have emphasized different factors as over-riding predictors of medical-care utilization. For example, Becker and Mainman (1975), Green (1959 & 1974), Hart, et al (1980), DiMatteo and Friedman (1982), stress psychological factors; Gochman (1971), Rosenstock (1969) and Vincent (1971) give the pride of place to motivational factors. Very specially relevant to this study is the cultural perspective. Brownlee (1978), Kleinman (1978) and Nall&Speilberg (1978) discuss in different contexts the impact of culture on health-care provision and utilization. Bullough (1974) and Snow (1974), in particular, hold that the socio-cultural values, norms, perspections and life patterns of specific societal groups serve as unifying factors affecting the health behaviors of members of the groups.

These studies would seem to indicate that perception of symptoms and the motivation to seek medical care are all functions of learning and attitude formation, both of which are acquired through relevant education and effective exchange of ideas. The implication is that positive attitude and behavior towards modern health practices are possible mainly through cultural change. But folk health beliefs and behaviors, like religious beliefs, are very impervious to rational arguments or to proofs of their dysfunctions. This is mainly because they are rooted in time and have been in use for generations. The best way to deal with such beliefs and behavior is to recognize and appreciate them for what they are and quietly or subtly dispel their ascribed "unchangeability" status through discussion and the provision of relevant information. Herein lies the import of Lynch's (1969) observation that cultural change can best be

realized if health personnel understand their own culture as well as the culture of those individuals to be influenced, and that cultural change occurs more rapidly when the individuals who are experiencing the change feel a need for the particular change, realize some advantages in it, and can actively participate in planning and effecting the change.

While it is true that effective health education can be carried out using the interpersonal method of communication, it is generally held that where large population concentrations and/or widely-scattered sparse populations are the target, it is better to use technological channels and modern methods of communication (supplemented with interpersonal methods). (See, for example: Schramm, 1964; UNESCO, 1965; McAnany, 1973; Jamison &McAnany, 1978; Perraton, 1981; Somavia, 1981; Mkapa, 1982; Mustafa, 1983; Perrett, 1983; Moemeka, 1981, 1985, 1987 and 1989). As far as the rural communities are concerned, the only modern medium of mass communication that has the potential of helping to create the interactive climate in which medical personnel, development communicators and rural inhabitants can learn from and appreciate one another's cultural values is the **radio**. This is because it is the cheapest of the three most popular mass media- radio, television and newspaper - and consequently it is widely owned even in ruralcommunities. It is also flexible enough to meet unique situations of operations that usually arise within rural communities.

This is the rationale behind the call for the establishment of rural or local radio stations in rural communities to help facilitate community development (Moemeka, 1981). But such local or rural stations must be structured to take into full account the socio-cultural context of the people (Moemeka, 1983). When the radio is localized in a rural community access and participation are made possible for the people. The physical and emotional interaction and exchange of ideas which the usually participatory nature of localized radio ensures, provide the opportunity for appreciating the health needs of rural inhabitants; for understanding the good intention of health-care and mass media personnel; for leading the rural communities to recognizing the advantages of modern health-care practices; and for the rural audiences to fully participate, along with health-care personnel and development communication agents, in the planning, production and the presentation of radio programs dealing with healthcare practices in the context of the rural communities.

Two basic models of the use of radio for rural development have been identified (Moemeka, 1987: 32). The first is the extension of the

program operations of an urban centralized radio stations to the rural areas while control and direct operational power still rests completely in the center of operation in the urban area. This model finds expression in **Rural** (or Local) **Broadcast Programing**. It has little or no room for target audience involvement and participation. The second model which gives practical application to what Willis (1997, p. 178) has called the Community Responsibility Perspective is **Rural** (or Local) **Radio Broadcasting** under which radio stations are built in rural communities with substantial control resting with the rural communities, and program content and operations based strictly on the norms, socio-economic and cultural conditions of the rural community. Willis points out that "those who work in these communities believe that they have a speecial responsibility to those they live with; that they are a critical part of the community and are in a special position to help the town (community) look for solutions to its problems."

A modified version of this model (and one which is the subject of this study) is that in which the radio station is not a stationary permanent structure but a mobile broadcast van or vehicle. The mobile station is driven from community to community to broadcast, under the same conditions as obtain when broadcasting from a stationary rural radio station. It provides a much better opportunity for access, involvement and physical participation.

In Africa, as in most of the developing world, the use of radio for rural development in general and for health education in particular, has mainly been based on the Rural Broadcast Programming model rather than on the more appropriate interactive and audience-oriented Rural Radio Broadcasting model. A number of health education projects through the radio (as well as a number of integrated rural development projects through other electronic media) organized from centralized stations and beamed to rural audiences far removed from the center of operations and who had no control whatsoever over the content and timing of the radio programs have been studied (AEGES, 1975; Greenholm, 1975; Hall, 1972; Contractor, et al, 1985; Starosta and Merriam, 1986). The studies show, unmistakingly, that the well-acknowledged versatility, pervasiveness and general accessibility capacity of the radio and other electronic media do not necessarily guarantee the utilization of particular program contents (Heshmat, 1967: 677). This is especially so under the rural broadcast programming strategy, where target audiences are hardly ever involved in the determination of program topics, content and timing, and are rarely involved in program production and presentation.

Purpose and Rationale

The question that immediately comes to mind is this: Would there have been positive difference if the organizers of these projects had used the Rural Radio Broadcasting model? Finding an answer to this question is part of the reason for this study. The Mobile Rural Radio Broadcasting project of the Broadcasting Corporation of Oyo State, Nigeria is used as the project case. The mobile station popularly known as "Radio O-Y-O On-the-Move" was established with the expressed intention of helping in the development of the rural communities in the State. The station was very specifically asked to pay particular attention to the improvement of the health of the people, that is, to provide a climate in which medical care, sanitation and nutrition could improve. The station moved from village to village, broadcasting one day at a time from each of the village.

The health programs were directed at **informing and educating** the rural communities of the benefits of modern medical-care practices, clean/healthy environments and nutritious diets, and **communicating** with them on how best to achieve a change in behavior from time-honored traditional methods to the modern. In specific terms, the radio programs were mainly directed at getting the people to use, in large numbers and regularly, the modern medical facilities provided in the villages; getting them to dig pit-latrines and refuse-dumps (composts) as well as to build huts for their domestic animals to sleep in instead of bringing them into the house at night; and to develop the habit of eating fruits and vegetables. The type of programs ranged from straight talks through dramatic sketches and play-lets; interpretation and application of adages, folk songs and ballads to story-telling; questions and answers, interviews and discussions. The programs were produced not just in the local language - Yoruba - but in the specific dialect of each participating target audience. The choice of topics for the programs, the basic themes, the timing for production and presentation, and the format and style of presentation were decided upon in pre-production meetings attended by members of the community, radio personnel, health assistants, medical personnel and, when available, agricultural extension agents.

A second reason (one which follows directly from the first) for this study is to test empirically if the participation and interaction made possible by Rural Radio Broadcasting can make a difference in the acquisition of knowledge about, and adoption and utilization of, modern health-care practices. While the concept of participation has been mentioned and upheld (see, for example: Freire, 1970; Schramm &

Lerner, 1976; Rogers & Shoemaker, 1971; Rogers, 1976; Rogers, et al, 1977; Chikulo, 1979; Somavia, 1981; Moemeka, 1981 & 1989; Naraula& Pearce, 1986) as a necessary element in development, especially rural development, there seems to be no direct attempt at testing its possible impact empirically. It would appear that specialists have taken importance and impact for granted. This study scientifically tests the potential of target audience participation as a key element in positive behavior change towards development.

Hypothesis

> **Target audience participation is positively related to the effectiveness of rural radio broadcast programs on (health) behavior change.**

Operationalization

The study revolves around two basic variables. The first is the independent variable - Participation - which of two types: Physical and Radiational. The second is the dependent variable - Effectiveness - which is also of two types: Cognitive and Behavioral. Behavior is examined with reference to modern Medical Care, Sanitation and Nutrition which are treated as the indicators of Behavioral Effectiveness.

Participation

Physical-Physically taking part in some or all of the activities of the mobile rural radio station in any of the villages. Such action include: Setting up the site for the rural broadcast, running errands, taking part in meeting for program planning, for program content determination and production format and styles, being a program artiste, helping in studio managing, in program production and in program presentation.

Radiational- Accepting the demands of the radio messages and behaving accordingly solely as a result of witnessing or experiencing the change in behavior of physical participants (without physically participating personally and without explicit action on the part of physical participants urging one to change behavior in accordance with the demands of the radio messages).

Effectiveness

Cognitive- Being aware of the demands, recommendations and suggestions of the radio messages, and understanding the implications of their contents.

Behavioral- implementing on personal and family levels the demands, recommendations and suggestions of the radio messages on the expected behavior on –

(i) Medical care, which was measured by the frequency of taking treatment from dispensaries and/or maternity-homes, undergoing periodic medical checkup, and registering wife for ante-natal and natal care;
(ii) Sanitation, which was focused on environmental hygiene. This was measured by the frequency with which both the house and the immediate surroundings were cleaned; keeping domestic animal away from humans at night; and having a systematic and hygienic method of disposing household refuse;
(iii) Nutrition, which was measured by the frequency of eating of vegetables (bitter-leaf, okro, water-leaf, green, etc) and fruits like banana, paw-paw, melon, oranges etc, - all of which are sufficiently produced in practically all the rural communities but are generally sold off to urban dwellers.

Methodology

Sampling

A multi-stage sampling procedure was used. It involved selecting villages, then houses within the villages, and finally respondents from the houses. The simple random technique was used at the first two stages and purposive sampling at the third. The villages were groups into two. Those villages from within which the radio station did broadcast (and therefore whose members were provided with access for participation in the station's program activities) were grouped as Broadcast Villages. Those villages which did not have the opportunity of having the station broadcast from within them, and therefore did not have access for participation, were grouped as Listener Villages. From each group, fifteen villages were randomly selected based on similarity on the following variables: Medical facilities, population, major occupation, number of secondary schools, number of primary schools and number of radio sets. Sample villages from the Broadcast village group served as

the Experimental group; while those from the Listener village group served as the Control group. Using type of house as matching criterion –

1. modern houses: cement block and zinc roof buildings;
2. semi-modern houses: mud block and zinc roof buildings; and
3. traditional houses: mud paste and tatched roof buildings,

400 sample houses were randomly selected in the ratio of 2:5:3. From each house, one respondent was purposively selected for interview. The respondent purposively selected was the person identified as having the power and authority to make decision on family health practices. In the typical rural community setting such as we were working in, such persons were the heads of the families who, invariably, were all men.

Research Design

A posttest-only control group experimental design (Campbell & Stanley, 1963: 8) was used. This design has been shown to be superior to other designs because it eliminates the problem of interaction between testing and stimulus, provided proper randomization has been done. With random assignment to experimental and control groups, the subjects were assumed to be comparable. Table (12.2) would seem to provide a validation proof. Based on this, any difference or differences among the subjects would then be attributed to the relationship between the subjects and the activities of the radio station or the research treatment.

Even though we used the posttest-only experimental design, we had the advantage of records kept at the Maternity Homes and Dispensaries before the study began. We used these as pre-treatment utilization information to determine whether or not the radio programs were effective as far as medical care was concerned, and tried to infer the truth of the self-report of the respondents on Sanitation and Nutrition from the level of correspondence between the pre-treatment and post-treatment utilization records kept at the medical facilities. [See Table (12.1) for details of the records]. In addition, we counted the number of existing pit-latrines and domestic animal huts. Altogether there were 36 and 29 respectively in the Broadcast Village group and 30 and 34 in the Listener Village group. We also checked on the distribution and sale of fruits and vegetables which the villages produce in very large quantities. Very few of these were sold in the local/village markets. The rest (about 95%) were set up for sale along the major roads where civil servants and the well-to-do that use the roads regularly could buy them.

The experimental group (Broadcast Villages) received the research treatment which is having the radio station broadcast from within their community thus providing access for direct participation in the program activities of the station. The control group (Listener Village s) did not receive the treatment, and therefore did not have direct access for participation in the program activities. However, they listened to the same radio program content as did subjects of the experimental group.

It is important to state here that the study population is one homogenous community with friendships and relationships cutting across our artificially decided line of distinction. Some Listener Village members visiting friends and/or relations in the Broadcast Villages did participate in the radio program activities, and did report their participation when they were interviewed. This is why the Listener Village category under the T-Tests (pp. 236 & 237) scored more than zero on participation.

Measurement

A questionnaire containing 24 questions majority of which were open-ended was used. The questions ranged from those dealing with demographics to those dealing with involvement with the activities of the radio stations, specific role/roles played, the relevance of the content of the radio messages, recall of specific radio programs and program artistes, definite behavior changes as a result of the radio messages and/or as a result of behavior changes in neighbors, co-workers, friends, etc who participated in the radio station's activities, and reasons for behavior change in those who did not physically participate.

Examples of questions include: What specific role or roles did you play in the radio station's activities? (This was to help identify participation). Can you recall one program that you listened to? How relevant was the content of that program to the community's health problems? How has your behavior changed with particular reference to Medical care, to Sanitation and to Nutrition? What impact did your physical participation in the radio station's activities have on your behavior change? If you did not physically participate in the radio station's activities, were you explicitly or verbally persuaded by anyone, especially those who physically took part in the station's activities, to accept and behave according to the demands of the radio programs? If you did not physically participate, and you were not verbally persuaded to change, why did you change? (This was part of the questions to help identify the presence or not of radiation).

Because of the very high rate of illiteracy in the village, the interviewing was done face-to-face. And because about 90% of the sample respondents were farmers, petty traders, fishermen and craftsmen who, invariably, were at home in late evenings, interviewers had little problem contacting the respondents. A further help here was the enthusiasm of the villagers to talk about the project. These factors combined to produce a response/return rate of 98.75%. Thus 395 of the 400 respondents agreed to be, and were, interviewed. Of these, 194 were from the Broadcast Village group and 201 from the Listener Village group. The demographic characteristics of the respondents are shown in Table (12.2). It clearly shows that the groups were evenly matched.

Result and Analysis

The objective of this study has been to validate or invalidate the claim by many development communication specialists that participation of target audiences in development communication activities is a key factor/element in the success or effectiveness of such activities. The contention was that such a claim could be tested using the activities of a mobile rural radio station (Radio O-Y-O on-the-Move) charged with the task of helping to improve the health of rural communities. Hence our hypothesis states that—

> Target audience participation is positively related to the effectiveness of rural radio broadcast programs advocating health behavior change.

Three different statistical analysis methods were used in trying to reach a conclusion on the correct impact of participation in the Radio O-Y-O Mobile rural radio project, and therefore in determining whether or not our hypothesis is supported. They involve taking the following steps:

- determination of the appropriateness of the indicators of the participation variable used in the study, that is, their relationship to participation, and to one another. [Table (12.3) – Correlation Matrix];

- determination of the relationship between participation and the demographic and effectiveness variables. [Table (12.4) – Correlation Matrix];

- determination of the contribution of participation (controlling for no other variable) to behavioral effectiveness, and its contribution, (controlling for demographic variables and cognitive effectiveness) [Table (12.5) – Regression Analysis].

- determining if there is a difference on the effectiveness of the radio programs between the Experimental Group (the Broadcast villages) that received the research treatment - Participation – and the Control Group (the Listener villages) that did not. [Table (12.6) –T-Test]; and

- determining if there is a difference on effectiveness of the programs between members of the Experimental Group - the Broadcast villages who did not physically participate, and members of the Control Group - the Listener villages – none of who participated. [Table (12.7) - T-Test].

Table 12.1: Utilization of Medical Facilities.
Average No. of Patients per year

	Pre-treatment		Post-treatment		% Increase	
Type of Service	B/V	L/V	B/V	L/V	B/V	L/V
Registered pregnant Women	20	21	60	30	20	43
Deliveries	12	14	70	26	483	86
Cases referred to Hospital*	14	15	2	20	-600	33
Dispensary treatments	63	62	200	72	217	16
Children registered for regular check-ups	10	12	110	25	1000	108

B/V = Broadcast Village Group; L/V = Listener Village Group
*Most of these were unregistered pregnant women who had developed serious complications.

Table 12.2: Frequency Distribution.
(Demographic Characteristics)

VARIABLE			Total (N=395)	Response Details Broadcast Village (N=194)	Listener Village (N=201)
Have children in city		*Yes*	58.0%	51.5%	64.2%
		No	42.0%	48.5%	35.5%
Age	Below 49		46.3%	54.1%	48.8%
	Above 49		53.7%	45.9%	51.2%
Have a wife		*Yes*	90.1%	90.8%	89.6%
		No	9.9%	9.2%	10.4%
Level of Education		*None*	41.8%	37.6%	41.8%
	1-4 years		26.1%	26.3%	25.9%
	5-8 years		23.8%	24.7%	22.8%
	Tech/Second.		8.4%	11.3%	9.5%
Have special Status		*Yes*	17.5%	20.1%	18.9%
		No	82.5%	79.9%	82.1%
Mainly a farmer		*Yes*	53.7%	53 7%	54 7%
		No	46.3%	47.3%	46.3%

Table 12.3
Correlation Matrix for Indicators of Participation.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Participation	1.00											
2. Cognitive	.54*	1.00										
3. Age	-.15	.28*	1.00									
4. Married	.02*	-.11	-.12	1.00								
5. Social Status	.32	-.03	.28*	.15	1.00							
6. Education Children	.08	.19	.32*	.13	.23	1.00						
7. Education	.36*	.57*	-.28*	-.01	.02	.22*	1.00					
8. Occupation	.24*	-.26*	.23*	.05	-.08	.10	-.43*	1.00				
9. Medical Care	.50*	.22*	.08	.12	-.16	-.42*	-.19	-.19	1.00			
10. Sanitation	.25*	.31*	-.23*	.03	-.05*	.02	.15	-.06	.05	1.00		
11. Nutrition	.24*	.61*	-.18	.11	-.08	-.04	.26*	-.12	.39*	.27*	1.00	

N= 395

*p<.01

Table 12.4
Correlation Matrix for Independent, Dependent and Demographic Variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Participation	1.00											
2. Cognitive	.34*	1.00										
3. Age	-.15	.28*	1.00									
4. Married	.02*	-.11	-.12	1.00								
5. Social Status	.32	-.03	.28*	.15	1.00							
6. Education Children	.08	.19	.32*	.13	.23	1.00						
7. Education	.36*	.37*	-.28*	-.01	.02	.22*	1.00					
8. Occupation	.24*	-.26*	.23*	.05	-.08	.10	-.43*	1.00				
9. Medical Care	.50*	.22*	.08	.12	-.16	-.42*	-.19	-.19	1.00			
10. Sanitation	.25*	.31*	-.23*	.03	-.05*	.02	.15	-.06	.05	1.00		
11. Nutrition	.24*	.61*	-.18	.11	-.08	-.04	.26*	-.12	.39*	.27*	1.00	

N= 395

*p<.01

Table 12.5: Regression Analysis:
Impact of Participation on Behavioral Effectiveness.
(Standardized Coefficient with Metric Coefficient in Parenthesis)

Independent Variables	(1)	(2)	(3)	(4)
Participation	.39* (.90)	.25* (.57)	.32* (.74)	.25* (.57)
Age		-.15+ (-1.09)		.05 (-.34)
Wife		.14+ (2.09)		.07 (.99)
Educated Child in cities		-.10 (-.71)		-.10 (-.70)
Status		.13 (1.12)		.15+ (1.29)
Education		.25* (.84)		.11 (.38)
Farm (Occupation)		-.04 (-.26)		.03 (.21)
Cognitive Effectiveness	.51* .	(2.83)	.47*	(2.60)
Constant	.70	.03	-2.76	-3.15
R-squared	.15	.28	.45	.48
N	194	194	194	194

*P < .0001; +P < .05

Table 12.6
T-TEST
Difference between Experimental Group (Broadcast villages) and Control Group (Listener villages).

Variables	Group	Cases	Mean	SD	T/Value	2-tail Probab.
Participation	Broadcast	194	1.046	1.507	7.22	.000
	Listener	201	.209	.588		
Cognitive Effectiveness	Broadcast	194	1.294	.629	9.67	.0000
	Listener	201	.677	.640		
Medical Care	Broadcast	194	1.640	3.492	11.17	.0000
	Listener	201	-1.553	1.947		
Sanitation	Broadcast	194	.815	2.174	6.57	.0000
	Listener	201	-.390	1.363		
Nutrition	Broadcast	194	.791	1.599	7.83	.0000
	Listener	201	-.762	2.291		

Table 12.7
T-TEST
Difference between non-physical participants of the Experimental Group, and respondents of the Control Group.

Variable	Group	Cases	Mean	SD	T/Value	2-tail Probab.
Participation	Broadcast	114	.000	.000	-.504	.000
	Listener	201	.209	.588		
Cognitive Effectiveness	Broadcast	114	1.272	.642	7.92	.000
	Listener	201	.677	.640		
Medical Care	Broadcast	114	.955	3.294	7.43	.000
	Listener	201	-1.55	1.947		
Sanitation	Broadcast	114	.651	2.389	4.27	.000
	Listener	201	-.389	1.363		
Nutrition	Broadcast	114	.737	1.643	6.72	.000
	Listener	201	-.762	2.291		

The Correlation Matrix (Table 12.3) on the indicators of the independent variable - participation - show that there is proof of correlation among the indicators and therefore between them and participation. A second matrix (Table 12.4) determines reasonable relationship. It shows strong relation between participation and cognitive effectiveness, and between it and each of the indicators of behavioral effectiveness. The result of these matrices would seem to indicate that participation was appropriately conceptualized and adequately and correctly measured for the purposes of this study.

Table (12.5) provides evidence of substantial contribution by participation to the effectiveness of the radio programs. At $p<.0001$ participation was B=.39. Controlling for cognitive effectiveness did seem to give more credence to the importance of participation. At $p<.0001$ the coefficient for participation hardly changed: B=.32. Even when

demographic variables and cognitive effectiveness were controlled for together, the contribution of participation was still high: B=.25 at p<.0001.

T-Test (Table 12.6) was used to determine where and to what extent effectiveness occurred, that is, whether the contribution of participation highlighted by the regression analysis occurred in the Broadcast village group or in the Listener village group and what difference, if any, there is between the two groups. With differences statistically significant at p<.0000 the impact of participation would seem to have occurred almost exclusively in the Broadcast village group (the Experimental group) where members of the target audience physically participated in the activities of the mobile rural radio station. This confirms the hypothesis.

The second T-Test (Table 12.7) was used in an attempt to determine whether or not there was physical participation radiation effect. The table appears to affirm that there was. The difference between the non-physical participants of the Broadcast village group (Experimental) and members of the non-participating Listener village group (Control) is statistically significant at p<.000 on all the variables. For a number of important reasons, the differences do not appear to be attributable to any other factor than radiation. Sample villages and sample houses were selected on comparability basis; even though respondents were purposively selected, they were, as shown in Table (12.1) very similar in the relevant characteristics; and all the respondents, irrespective of village group, were exposed to the same radio program content. Both village groups were virtually even on whether the content of the programs were relevant to the socioeconomic and cultural contexts of their communities. 95.3% of the Broadcast Village respondents and 94.5% of the Listener Village respondents indicated that the program contents were relevant. And 91.7% of the Broadcast Villagers as against 91.5% of the Listener Villagers said the new ideas in the programs were introduced in such a way as not to antagonize the people's tradition and custom. Furthermore, the non-physical participants of the Broadcast Village group (the Experimental Group) and the members of the non-participating Listener Village group (the Control Group) were largely similar on the variable 'participation'. They did not physically participate. The only difference between them appears to be locational.

The non-physical participants of the experimental group lived in the same village group as those who physically participated, while the respondents of the control group lived in a different village group in which there were no physical participants. This difference would appear to explain the difference in the behavioral effectiveness of the radio

programs on both groups. Because the physical participants lived among the nonphysical participants, their participation appears to have had a salutary effect on the behavior of the latter. A very high percentage of the experimental group respondents who did not physically participate but had changed their behavior, affirmed that the most important factor that affected their behavior in favor of the recommendations of the radio programs was (for 32%) noticing the change in behavior and health conditions of the physical participants and (for 57%) noticing the same in other non-physical participants who had already informally learned from the physical participants. When, as a result of the physical participation of friends, co-workers, neighbors, etc, in an action program which has led to changes of behavior in these participants, a group of people, without being persuaded or coerced to do so, begin to behave as if they, too, did participate and to change their own behavior accordingly, radiational participation is said to have taken place (Moemeka, 1987).

Discussion

The importance of target audience participation seems to lie mainly in the enhancing climate it creates for exchange of ideas and building of co-orientation, both of which create a sense of self-worth and involvement, and more importantly, commitment to agreed lines of action. Respondents of the experimental group attest to this fact through the emphasis which about 90% of them placed on 'being recognized and trusted enough to be given the opportunity to participate and contribute directly to the welfare of the community'.

In their explanation of why participating was important to them, these respondents referred to, in different words, what one might call the four guiding principles that make for acceptability and effectiveness of most communication content (Cutlip & Center, 1978:355). These are: Identification principle which requires that messages be stated in terms of the interests of the target audience; the Action principle which suggests the provision of a relevant means of solution for any problems identified; Familiarity and Trust principles which recognize the importance of credibility on the part of the communicator in order to enhance the confidence which the target audience may have in the message; and Clarity principle which demands that words, symbols and/or stereotypes that the receiver comprehends and responds to should be employed in order to effectively communicate with him/her. Their participation in the station's activities created the atmosphere in which all the principles obtained, creating a conducive climate for trust,

co-operation, co-orientation and relevance of content which helped to make effectiveness possible.

This effectiveness finds concrete expression in the substantial differences between pre-treatment and post-treatment conditions in the villages. For the example, the number of pit-latrines increased from 36 to 201 in the Broadcast Village group, and from 30 to 60 in the Listener Village group. Domestic animal huts increased from 29 to 400 and from 34 to 90 respectively. The shift in nutrition condition was not easy to quantify. However, it appeared that more than half of what was usually displayed along the roads had been diverted to the local markets (an indication of possible increase in demand and therefore in consumption in the villages). The change in medical care conditions is shown in Table (12.1).

The number of villagers who changed in behavior far outweighs the number that physically participated in the radio programs. It would appear therefore that there was positive radiation effect. While there can be no radiational participation without physical participation, it is the informal education characteristics of radiational participation and its snow-balling effect (Moemeka, 1987) that helps expedite the spread of the impact of physical participation thus creating what Rogers and Storey (1987) have called "mobilization of communities to act as change agents". This has double effect. It gives local legitimacy to values and norms for healthy behavior; and it makes the social and physical environment more conducive for individuals to act positively.

This study appears to have validated the claim that target audience participation is a very effective ingredient for ensuring substantial positive behavior change for development purposes. It therefore would appear to have added to our knowledge of the field of Health Communication which (Reardom, 1988) is geared towards studying how and under which conditions communication may persuade and motivate people to adopt healthier lifestyles and behaviors as a matter of health promotion and disease prevention. The study also shows that merely hearing and learning from a relevant radio message without participating in the radio activities can produce some effective results. The changes in the Listener Village group are, in themselves, worthwhile. But in the face of the substantially overwhelming positive changes in the Broadcast Village group, such moderate changes seem to fall into insignificance. The indication therefore would seem to be that if simple positive changes are all that is needed, then the Open Broadcast strategy (Gunter & Theroux, 1977) which does not require target audience participation would suffice; but if substantial changes are needed, then the Local

Radio Broadcast strategy (Moemeka, 1981) predicated on the physical participation of target audiences would be a necessity.

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